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(54) QUARTZ GLASS MATERIAL FOR OPTICAL MEMBER FOR F2 EXCIMER LASER, AND  
OPTICAL MEMBER

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a material having a high light transmittance at an oscillation wavelength of an F2 excimer laser by respectively specifying the OH group concentration, F concentration and H concentration.

SOLUTION: This material is obtained by regulating the OH group concentration to  $\leq 5$  ppm, the F concentration to 0.1-2 mol% and the H concentration to  $\leq 5 \times 10^{16}$  molecules/cm<sup>3</sup>. The material is further excellent in laser resistance to irradiation with an F2 excimer laser. The material preferably has  $\geq 70\%$  internal transmittance at 157 nm which is the F2 excimer laser oscillation wavelength and/or  $\geq 90\%$  internal transmittance at 163 nm and/or  $\leq 5\%$  lowering of transmittance at 157 nm wavelength based on 10 mm after irradiation of  $3 \times 10^5$  pulses of the F2 excimer laser at 10 mJ/cm<sup>2</sup> energy density per pulse and/or  $\leq 2 \times 10^{-5}$  difference n between the maximum value and the minimum value of the refractive index and/or  $\leq 0.5$  nm/cm amount of refractive index when making measurement at 633 nm wavelength. Thereby, the resultant material is useful for a lens a window, etc., for transmitting the F2 excimer laser.

LEGAL STATUS

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